

U.S. Patent Application Serial No. **09/940,788**
Amendment filed June 15, 2005
Reply to OA dated April 1, 2005

REMARKS

Claims 1-3 are pending in this application. Claims 1-3 have been amended herein in order to more particularly point out and distinctly claim the subject matter to which the applicants regard as their invention. The applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **April 1, 2005**.

Support for the amendments to the claims is discussed below.

Claims 1-3 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office action paragraph nos. 4-5)

The Examiner states that the claim is directed to a “cleaning method of wet-cleaned wafers” (i.e., the preamble), but that the bodies of the claims are directed to spin drying a wafer with inert gas.

The rejection is overcome by the amendments to the claims, in which the preamble is amended to recite “A spin-drying method of wet-cleaned wafers”.

This amendment is made for clarity only, and does not affect the scope of the claims. Applicant notes that it is apparent from the specification that cleaning methods of wet-cleaned wafers generally include spin-drying steps (see, for example, page 2, lines 8-12). The preamble is a statement of the purpose or utility of the recited invention, and Applicant submits that the relationship between the recited steps and the preamble was clear in the original claims.

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Claims 1-3 are rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements.
(Office action paragraph no.6)

The rejection of claims 1-3 is respectfully traversed, and reconsideration of the rejection is requested.

The Examiner indicates that the “hollow gas injection section (reference numeral 30) with baffle plate (reference numeral 35) interposed therein” is an omitted element, because it required to enable gas to be directed to the other peripheral edge of the baffle plate and to pass through the bottom plate.

In traversing the rejection, Applicant first notes that the present claims are method claims, and a “missing element” in a method claim would generally be a missing step. However, the Examiner does not refer to a missing step, and Applicant submits that no step is missing.

Secondly, the basic criterion for this rejection is that the claims omit matter disclosed to be **essential** to the invention.

Claim 1 recites the path along which the inert gas is supplied. The amended recitation introduced on March 24, 2005, introduced the structural elements of a baffle plate (having an upper face and an outer peripheral edge) and a bottom plate having injection openings. The specification clearly discloses the structure associated with the recited step of supplying the inert gas, and how to perform this step.

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Since claim 1 recites the “baffle plate”, the Examiner apparently refers to the “hollow gas injection section 30” as being a missing, essential element. This element is disclosed on page 14, line 11, of the specification, as comprising “a flat hollow body communicating with the inert gas supply source ...”. The baffle plate 35 (page 17, line 22) appears under the gas injection section 30, in the embodiment illustrated in Figures 2 and 3. However, **the specification never states that gas injection section 30 is “essential.”**

The second clause of claim 1, as amended herein, recites:

“where the inert gas is supplied along the upper face of a baffle plate, turns around the outer peripheral edge of the baffle plate, and passes through injection openings of a bottom plate, said injection openings being located between the baffle plate and the wafer”

Applicant submits that the essence of this step is **supplying** the inert gas such that it **follows the recited path defined by the baffle plate and injection openings**, and that the remainder of the apparatus structure used to achieve this is not relevant in this method claim. That is, it is irrelevant whether or not there is a “hollow gas injection section 30”. One of skill in the art could clearly develop other structures, varying from those of the drawings in the present specification, that would achieve the recited gas path, and the claims should not be limited to use of the structure in the embodiment shown in the Figures.

Reconsideration of the rejection is respectfully requested.

Claims 1-3 are rejected under 35 U.S.C. §103(a) as being unpatentable over CADY

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(previously cited) in view of U.S. Patent No. 6,190,732 to OMSTEAD et al. (hereinafter “Omstead”) (Office action paragraph 10)

The rejection of claims 1-3 is respectfully traversed, and reconsideration of the rejection is respectfully requested.

The Examiner states that “Cady does not disclose a baffle plate redirecting gas around the outer gas around the outer periphery of the baffle plate and to a bottom plate with injection openings.” The Examiner has therefore accepted that the amendment to claim 1 of March 24, 2005, overcame the rejection over Cady taken alone.

The Examiner cites Omstead for the disclosure of a baffle plate (deflector plate 38) in a center portion of a hollow gas showerhead (housing 20), in column 9, lines 1-15, and Figure 2.

Omstead’s Figure 2, which discloses “prior art”, discloses a chemical vapor deposition system in which process gas flow 40 flows through housing 20, and is dispersed by deflector plate 38, then passing though openings 24.

However, Applicant notes that Omstead states:

“Incoming gas flow 40 enters the top of housing 20 through gas feed opening 14 along an intake vector 44, and exits housing 20 along an outflow vector 46 that is substantially parallel to intake vector 44. The low conductance of the small gas dispersion plate openings 24 **aid in providing a uniform process gas flow over substrate 26** by creating a slight back pressure in housing 20. However, the low conductance of openings 24 and the presence of deflector plate 38 tend to slow the evacuation of process gas through process chamber evacuation opening 30 located in reaction chamber 12 below substrate support chuck 28.” (column 9, lines 5-15, emphasis added)

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That is, the device of Fig. 2 in Omstead achieves “uniform process gas flow” and therefore **does not achieve the limitation of the last clause of claim 1** (where the amount supplied at the outer peripheral portion is larger than at the center). There is no suggestion in Omstead for this limitation of claim 1. Therefore, **the combination of Omstead with Cady cannot achieve this limitation.**

Moreover, Applicant has amended claim 1 to clarify a structural difference between Omstead’s Fig. 2 and the structure recited in claim 1. The wording of claim 1 has been grammatically amended to clarify that the injection openings, and not just the bottom plate, are located between the baffle plate and the wafer. Support for this amendment may be found in the general description on page 14, lines 16-22, and in Figures 2 and 3 of the specification.

In Omstead’s Fig. 2, the deflector plate 38 is much narrower than the spacing of openings 24. As a result, many of the openings 24 are not directly between the deflector plate 38 and the substrate 26 (i.e., wafer).

By contrast, claim 1, as currently amended, requires that the injection openings of the bottom plate be “located between the baffle plate and the wafer.” This aspect of the present invention can be seen in Fig. 2 of the present application, where all of the injection openings are directly between the baffle plate and the wafer. The cited references therefore do not disclose or suggest this structural limitation in amended claim 1.

Applicant therefore submits that the claims, as amended, are novel and non-obvious over Cady and Omstead, taken separately or in combination.

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In view of the aforementioned amendments and accompanying remarks, the claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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